

IN THE CLAIMS:

Claim 1.(previously presented): A server for use in a system which provides information to a user terminal, said server comprising:

a database for retaining a plurality of pieces of bubble data, each of the bubble data pieces including:

a piece of spatial range information, which specifies a spatial range in a space and includes a latitude of an object, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range, and

a piece of retrieval information, which is associated with the spatial range information piece and is linked to a piece of service information;

an extracting section, responsive to a piece of positional information transmitted from the user terminal, for retrieving from said database a spatial range information piece whose spatial range includes a position that accords with the positional information piece, and extracting a retrieval information piece associated with the retrieved spatial range information piece from said database; and

a providing section for providing the user terminal with a service information piece linked with the retrieval information extracted by said extracting section.

Claim 2. (previously presented): A server for use in a system which provides information to a user terminal, said server comprising:

a database for retaining a plurality of pieces of bubble data, each of the bubble data pieces including:

a piece of spatial range information, which specifies a spatial range in a space and includes a latitude of an object, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range, and

an address associated with the spatial range information piece and linked to a piece of service information relating to the object;

an extracting section, responsive to a piece of positional information that is transmitted from the user terminal and includes a latitude of the user terminal, a longitude thereof, a direction thereof and an inclination angle thereof, for retrieving from said database a spatial range information piece whose spatial range includes a position that accords with the positional information piece, and extracting an address associated with the retrieved spatial range information from said database; and

a providing section for providing the user terminal with a service information piece linked with the address extracted by said extracting section.

Claim 3. (previously presented): A server for use in a system which provides information to a user terminal, said server comprising:

a database for retaining a plurality of pieces of bubble data, each of the plural bubble data pieces including:

a piece of spatial range information, which specifies a spatial range in a space and includes a latitude of a building, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range, and

a uniform resource locator, which is associated with the spatial range information piece and is linked to a piece of service information related to the facility;

an extracting section, responsive to a piece of positional information that is transmitted from the user terminal and includes a latitude of the user terminal, a longitude thereof, a direction thereof and an inclination angle thereof, for retrieving from said database a spatial range information piece whose spatial range includes a position that accords with the positional information piece, and extracting a uniform resource locator associated with the retrieved bubble data piece from said database; and

a providing section for providing the user terminal with a service information piece linked with the uniform resource locator extracted by said extracting section.

Claim 4. (original): A server according to claim 3, further comprising a web information outputting section for holding user information and an address generating section for generating an address retaining said user information held in said web information output section.

Claim 5. (previously presented): A server for use in a system which provides information to a user terminal, said server comprising:

a database for retaining a plurality of pieces of bubble data, each of the bubble data pieces including:

a piece of spatial range information, which specifies a spatial range in a space and includes a latitude of a target, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range, and

an address associated with the spatial range information piece and linked to a piece of message information retained in a range of the bubble diameter;

an extracting section, responsive to a piece of positional information that is transmitted from said user terminal and includes a latitude of said user terminal, a longitude thereof, a direction thereof and an inclination angle thereof, for retrieving from said database a spatial range information piece whose spatial range includes a position that accords with the positional information piece, and extracting a message information piece associated with the retrieved bubble data piece from said database; and

a providing section for providing the user terminal with the message information extracted by said extracting section.

Claim 6.(original): A server according to claim 1, wherein said database sets an address based on said spatial range information as an electronic mail address, and retains said spatial range information in corresponding relation to said electronic mail address.

Claim 7.(original): A server according to claim 1, wherein said database retains, as said bubble data, service information on a public transportation terminal and information on transportation time.

Claim 8.(original): A server according to claim 7, wherein said database updates said information on transportation time according to the present time.

Claim 9. (previously presented): A server according to claim 2, wherein said database is

designed to sequentially update said bubble diameter of said bubble data on the basis of said positional information transmitted from a moving object.

Claim 10. (canceled)

Claim 11. (previously presented): A user terminal for use in a system which provides information to said user terminal, said user terminal comprising:

a detecting section for detecting positional information including a latitude of an object, a longitude thereof, a direction thereof and an inclination angle thereof;

a transmitting section for transmitting said positional information, detected in said detecting section, to a server;

a receiving section for receiving, in connection with said positional information transmitted from said transmitting section, specified service information corresponding to specified spatial range information including said positional information, of spatial range information comprising a latitude of an object, a longitude thereof and a bubble diameter thereof in a three-dimensional space transmitted from said server and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range; and

a displaying section for displaying said specified service information received in said receiving section.

Claims 12-14. (canceled)

15. (canceled)

16. (previously presented): A user terminal for use in a system which provides information to said user terminal, said user terminal comprising:

a detecting section for detecting a piece of positional information about an object;

a transmitting section for transmitting said positional information piece detected in said detecting section to a server;

a receiving section for receiving a piece of service information transmitted from said server in response to the positional information from said transmitting section, the service information piece being associated with a spatial range information, which specifies a spatial range including a position according with the positional information in a space and includes a latitude of an object, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range;

a displaying section for displaying the service information received by said receiving section; and

a voice guide section for conducting a guide using a speech file to a place relating to the service information received by said receiving section.

17.(previously presented): An information providing service system which has a server and a user terminal and provides information from said server to said user terminal:

said server comprising:

a database for retaining a plurality of pieces of bubble data, each of the bubble data pieces having a piece of spatial range information, which specifies a spatial range in a space and

includes a latitude of an object, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range, and

a piece of retrieval information, which is associated with the spatial range information piece and is linked to a piece of service information,

an extracting section, responsive to a piece of positional information transmitted from the user terminal, for retrieving from said database a spatial range information piece whose spatial range includes a position that accords with the positional information piece, and extracting a retrieval information piece associated with the retrieved spatial range information piece from said database, and

a providing section for providing the user terminal with a service information piece linked with the retrieval information extracted by said extracting section;

said user terminal comprising

a detecting section for detecting a piece of positional information about an object,

a transmitting section for transmitting said positional information piece detected in said detecting section to a server,

a receiving section for receiving the service information piece transmitted from said server in response to the positional information from said transmitting section, and

a displaying section for displaying the service information received by said receiving section.

18. (previously presented): An information providing service system according to claim 17, wherein said transmitting section transmits, to said server, a user's viewing direction detected

on the basis of an inclination angle of said user terminal with respect to a horizontal line, while said server retrieves a desired subject on the basis of said viewing direction.

19. (currently amended): An information providing service method for use in a system which has a server and a user terminal and provides information from said server to said user terminal, wherein said server includes a database for retaining a plurality of pieces of bubble data, each of the bubble data pieces having a piece of spatial range information, which specifies a spatial range in a space and includes a latitude of an object, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range, and a piece of retrieval information, which is associated with the spatial range information piece and is linked to a piece of service information, said method comprising:

a measuring step in which said user terminal measures positional information including its own latitude, longitude, direction and inclination angle;

a measured information transmitting step in which said user terminal transmits to said server said positional information measured in said measuring step and a retrieval condition;

a retrieving step in which, responsive to said positional information transmitted in said measured information transmitting step, said server retrieves from said database a service information piece whose spatial range includes a position that accords with the positional information piece, and extracts a retrieval information piece associated with the retrieved spatial range information piece from said database; and

a retrieval result notifying step in which said server notifies said user terminal of the service information extracted in said retrieving step.

20. (currently amended): An information providing service method, for use in a system which has a server and a user terminal and provides information from said server to said user terminal, wherein said server includes a database for retaining a plurality of pieces of bubble data, each of the bubble data pieces having a piece of spatial range information, which specifies a spatial range in a space, and a piece of retrieval information, which is associated with the spatial range information piece and is linked to a piece of service information, said method comprising:

a measuring step in which said user terminal measures positional information including its own latitude, longitude, altitude, direction and inclination angle;

a measured information transmitting step in which said user terminal transmits to said server said positional information measured in said measuring step and a retrieval condition;

a retrieving step in which, responsive to said positional information transmitted in said measured information transmitting step, said server retrieves from said database a service information piece whose spatial range includes a position that accords with the positional information piece, and extracts a retrieval information piece associated with the retrieved spatial range information piece from said database; and

a retrieval result notifying step in which said server notifies said user terminal of the service information extracted in said retrieving step

wherein said retrieving step includes:

an extracting step of extracting a second information bubble from a plurality of information bubbles representative of images of spatial occupancy information of bubble data on the basis of said positional information and said spatial range information of said bubble data;

an address extracting step of selecting a third information bubble from said

second information bubble extracted in said extracting step, and of extracting a uniform resource locator corresponding to said third information bubble; and

a selecting step of selecting and outputting said specified service information corresponding to said uniform resource locator extracted in said address extracting step.

21.(original): An information providing service method according to claim 20, wherein, in said retrieving step, an intersection information bubble intersecting a retrieval vector representative of a direction of said user terminal toward a subject to be retrieved is extracted as said second information bubble from said plurality of information bubbles.

22.(original): An information providing service method according to claim 21, wherein said extracting step is made to extract a bubble, positioned in a direction of the retrieval vector, as said second information bubble from said plurality of information bubbles, and said selecting step is made to output all said second information bubbles.

23.(original): An information providing service method according to claim 22, wherein said selecting step is made to output, of said second information bubble, a bubble existing in a predetermined range.

24.(original): An information providing service method according to claim 21, wherein said extracting step is made to extract, as said second information bubble, the first visible object of objects in a direction said user terminal takes, through the use of map data.

25.(original): An information providing service method according to claim 21, wherein said extracting step is made to extract said second information bubble taking configuration and location of a subject to be retrieved into consideration.

26.(original): An information providing service method according to claim 19, further comprising, after said retrieval result notifying step, a selected information transmitting step in which said user terminal transmits, of said plurality of specified service information notified in said retrieval result notifying step, service information selected by a user to said server and a displaying step in which said user terminal displays said service information selected in said selected information transmitting step.

Claims 27.-28. (canceled):

29.(original): An information providing service method according to claim 19, wherein said retrieval result notifying step is made to give, to a user, information including characters, images or voice on a subject to be retrieved.

30.(currently amended): An information providing service method for use in a system which provides information to a user terminal, said method comprising:

a map information acquiring step in which a communication terminal acquires map information;

a service providing place selecting step in which said communication terminal selects a desired service providing place from said map information acquired in said map information acquiring step; and

a generating step in which a server connected through a network to said communication terminal generates bubble data in association with said place selected in said service providing place selecting step, wherein said bubble data having a piece of spatial range information, which specifies a spatial range in a space and includes a latitude of an object, a longitude thereof and a bubble diameter thereof in the space, and a pair of the latitude and longitude is a center point of the spatial range, and the bubble diameter is a radius of the spatial range; and

a registering step in which the server writes, in a database the bubble data generated in a generating step related to a service information to provide the service information to said user terminal.

31.(previously presented): A server for a system according to claim 1, wherein said piece of spatial range information, specifies a spatial range in a two-dimensional space.

32.(previously presented): A server for a system according to claim 1, wherein said piece of spatial range information, specifies a spatial range in a three-dimensional space.